LG

Blu-ray Disc & HD DVD-ROM Drive

Owner's Manual

To fully enjoy all the features and functions of your product, please read this owner's manual carefully and completely.



English | Deutsch | Français | Italiano | Español | Português

GGC-H20N
GGC-H20L

CAUTION : The laser used in the Blu-ray Disc & HD DVD-ROM Drive can damage your eyes.
Do not attempt to open the cover.
To reduce the risk of electric shock, do not remove the cover (or back).
There are no user-serviceable parts inside.
Refer servicing to qualified service personnel.

Use of controls or performance of procedures other than those specified herein may result in hazardous radiation exposure.

WARNING : To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture

Industry Canada requirement

This class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

FCC COMPLIANCE STATEMENT

Note : This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.
These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an Authorized Service Center for help.

• FCC WARNING
Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

• This Blu-ray Disc & HD DVD-ROM Drive is for use only with UL listed personal computers that have installation instructions detailing user-installation of card cage accessory.

This product is manufactured to comply with the radio interference requirements of EEC DIRECTIVE 89/336/EEC, 93/68/EEC and 2006/95/EC.

CAUTION : CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO THE BEAM.

ADVARSEL : KLASSE 3B SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.

ADVARSEL : KLASSE 3B SYNLING OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPENS. UNNGÅ EKSPONERING FOR STRÅLEN.

VARNING : KLASSE 3B SYNLING OCH OSYNLIG LASERSTRÅLNING NÄR DENNAL DEL ÄR ÖPPNAD. STRÅLEN ÄR FARLIG.

VARO! : KURSSI 3B NÄKYVÄ JA NÄKYMÄTÖN AVATTAESSA OLET ALTTIINA LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEN.

CLASS 1	LASER PRODUCT
KLASSE 1	LASER PRODUKT
LUOKAN 1	LASER LAITE
KLASS 1	LASER APPARAT
CLASE 1	PRODUCTO LÁSER
CLASSE 1	PRODOTTO LASER

The appliance is not intended for use by young children or infirm persons without supervision.

- Microsoft® and Windows® are trademarks registered in the United States and other countries by the Microsoft Corporation.
- DVD Logo is a trademark of DVD Format/Logo Licensing Corp., registered in U.S., Japan and other countries.
- BD Logo is a trademark registered in U.S., Japan and other countries.
- The company names and product names written in this manual are trademarks or registered trademarks of the respective companies.

Contents

Features

- Serial ATA interface.
- Power tray loading and ejection of disc. (The disc can also be ejected manually.)
- CD-R/RW, DVD-R/RW/+R/RW/+/-R DL, DVD-RAM read and write compatible, CD Family, DVD-ROM, BD-ROM/R(SL/DL)/RE(SL/DL) and HD DVD-ROM read compatible.
- Supports Regional Playback Control Phase II for DVD-Video.
- Supports Windows XP SP2 Home Edition/Professional/Media Center Edition/Vista.
- Automatic buffer underrun error prevention technology.
- Supports LightScribe Direct Label Printing Technology - *Optional.

* You can use a variety of Disc format

	GGC-H20L	GGC-H20N
LightScribe	Supported	Not Supported

Package Items

Item	Quantity
- Blu-ray Disc & HD DVD-ROM Drive	1
- SATA Power cable	1
- SATA Data cable	1
- Application Software (Power2Go/Instant Burn, Power BackUp, Power Producer, PowerDVD)	1
- Owner’s Manual	1

Important Precautions

Follow these precautions when handling the drive or discs.

- Please take notice that the manufacturer of this equipment does not offer any warranty against data loss due to inappropriate installation or handling, or direct or indirect damages.
- Please take notice that the manufacturer will bear no responsibility for direct or indirect damages caused by the use of this product or its malfunction.
- Please take notice that the manufacturer will bear no responsibility for damage to data caused by this product.
- Please backup (copy) all important data as a protection against data loss.

- Avoid placing the drive in a location subject to:
  - high humidity, high temperature, excessive dust, mechanical vibration, direct sunlight

We recommend using the drive in a horizontal or vertical position.
Do not use it in tilted position.

- Don't move the drive suddenly from a cold place to a warm one or raise the room temperature suddenly. Condensation may occur, causing abnormal operation.
- Make sure to remove the disc before moving the drive. The disc may become damaged, causing data loss.
- Be careful to prevent foreign objects, such as liquids or metal, from entering the drive.
- Don't interrupt the electric power while the drive is operating.
- Please pay attention to handling Electrostatic Sensitive Devices, you may use anti-static products such as wrist straps, heel straps, mats to protect your body from electrostatic.

System Environment

Operating Environment

This unit can be operated in the system environment explained here.

System requirements	• CPU : Pentium D 3.2 GHz or higher (Motherboard that supports SATA.) • O/S : Windows XP (Home / Professional / Media Center Edition) with SP2/ Windows Vista (X86, X64) • RAM : 1GB or more • HDD : 30GB or more of available space
Interface	Serial ATA
Drive bay	5.25-inch half-height bay required
Power	+5V/+12V power socket required
Recommended media manufacturer	**DVD-R** : Maxell, Mitsubishi Kagaku Media, Taiyo Yuden. **DVD-RW** : JVC, Mitsubishi Kagaku Media. **DVD+R** : Mitsubishi Kagaku Media, Verbatim. **DVD+RW** : Mitsubishi Kagaku Media, Verbatim. **DVD±R DL** : Mitsubishi Kagaku Media, Verbatim. **DVD-RAM** : Maxell. **CD-R** : LG, Mitsubishi Kagaku Media, Verbatim, Taiyo Yuden or TDK. **CD-RW** : LG, Ricoh, Mitsubishi Kagaku Media, Verbatim.

* Compatibility problem in write/read function may occur with media depending on the media manufacturing quality.
* There may be some cases when motion picture playback is not smooth depending on bit rate.

• **Playing Blu-ray and HD DVD Movies *NOTICE***

	Graphic Card			**Monitor**		
	Driver	Interface	HDCP *2	Interface	HDCP	Resolution
Analog	AACS *1 Compliant	VGA (D-SUB)	Not required	VGA (D-SUB)	Not required	1024x768 or more (Recommended : 1920x1080)
Digital		DVI or HDMI	Compliant	DVI or HDMI	Compliant	

Due to copyright protection features, certain requirements must be met in order to playback BD and HD DVD movies on a computer. When using digital video connections, the monitor and graphics card must support High-bandwidth Digital Content Protection (HDCP). Note that most monitors and graphics cards currently don't support HDCP. But, most High Definition TVs and multimedia monitors do support HDCP. Refer to the PC or graphic card maker's web site to see if your card supports HDCP.

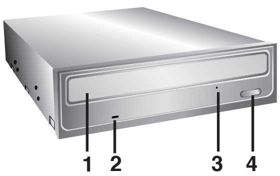
Some video cards that currently support HDCP:
- nVIDIA: GeForce 7800 GTX 512 / 7900 GT / 7900 GX2 / 7900 GTX / 7950 GX2 / 8600 GS / 8600 GT / 8600 GTS / 8800 GTX or higher with 256MB min memory.
- ATI: Radeon® X1950/ HD2300/ HD2400/ HD2600 series or higher with 256MB min memory.

*1 Graphic card driver shall meet AACS compliance criteria. Please consult your graphics card vendor for proper driver solution.
*2 HDCP (High Bandwidth Digital Content Protection): Required to view pre-recoded Blu-ray Disc and HD DVD Disc which are copy protected.

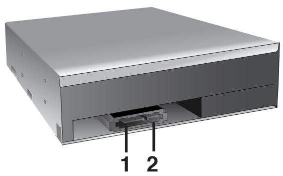
- ❑ Occasionally CD-R and CD-RW discs written by a CD-R/RW drive cannot be read by other CD drives. These unreadable discs may need to be read using the CD-R/RW drive they were created with. The disc written using the CD-R/RW drive might not be readable by CD-ROMs other than Multi-read compatible (UDF compatible) CD-ROMs.
  Multiread compatible (UDF compatible) CD-ROMs are CD-ROMs that can read low reflectance and support Packet Write.
- ❑ **Please note:** Certain software (i.e. particularly those including Video playback) may require a considerably increased specification PC to give acceptable results. While this Blu-ray Disc & HD DVD-ROM Drive can read DVD-video or BD-MV(BD-ROM) discs, decoding them to display on your pc's monitor requires separate MPEG, H.264 or VC-1 decoding that is done by separate hardware (either an MPEG, H.264 or VC-1 decoder card or MPEG, H.264 or VC-1 decoding done by your video card), or separate software that you install to do MPEG, H.264 or VC-1 decoding. For further details, refer to the documentation that comes with MPEG, H.264 or VC-1 software.

Location and Function of Controls

Front Panel



Rear Panel



Front Panel

1. **Disc Tray**
2. **Drive activity indicators**
   The LED used to indicate the operation of Blu-ray Disc & HD DVD-ROM Drive.
3. **Emergency Eject Hole**
4. **Eject Button**

Rear Panel

1. **SATA Power Connector (15 pin)**
2. **SATA Data Connector (7 pin)**

Installing the Drive

Before installing the drive, please note the following points.

- You will need the following:
  - A screw driver of a suitable size to fit the securing screws for the drive unit.
  - The manual for the computer, so you can find the mounting positions for the SATA cable.
- Turn off all peripheral appliances of the computer and the computer itself, and disconnect their power cords from the wall sockets.
- Discharge any static electricity on your person by touching the computer covers, etc.

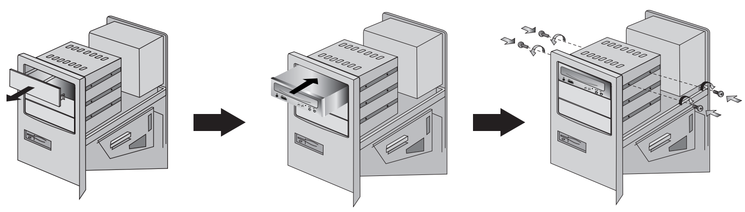
Removing the Computer Cover

Make sure all peripheral devices of the computer and the computer itself are turned off, and then remove the cover. Refer to the manual for the computer for details about removing the cover.

NOTE : There may be sharp edges inside the computer so take care to avoid injury.

Mounting the Drive

1. Remove the a 5^{1}/4″ drive bay panel from the computer. Refer to the manual for the computer for details.
2. Insert the drive unit into the bay. Do not apply excessive pressure to the cables inside the computer.
3. Secure the drive with the screws. If there is not much space behind the drive, connect the SATA and power cables before securing the drive.



NOTE : This is a general installation guide. If your PC hardware appears different, please consult your hardware manual for installing peripheral devices.

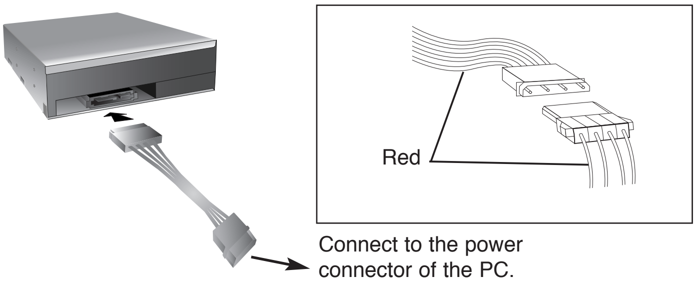
PC Connection

The Blu-ray Disc & HD DVD-ROM Drive connects to the motherboard of the host computer using a SATA interface cable.

Connecting the SATA Power Cable

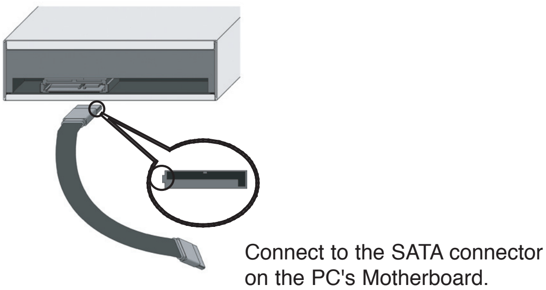
Connect the power cable so the projection of the cable connector side to come to the left side. Be careful not to connect upside down.

NOTE : Improper connection may damage the drive and void the warranty. Generally, the power connector can only fit one way.



Connecting the SATA Data Cable

Connect the data cable. Be careful not to connect upside down.



Device Drivers

When using Windows XP SP2 Home Edition/Professional/Media Center Edition/Vista, no special device driver is required. Your system, upon Power On and bootup after installing and connecting the new Blu-ray Disc & HD DVD-ROM Drive, will recognize and load native software drivers automatically.

For Windows XP Users

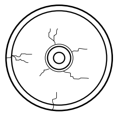
- In order to ensure normal drive operation, please check the following:
  - The drive is displayed in
    Windows XP : [Control Panel]-([Performance and Maintenance])-[System]-[Hardware]-[Device Manager]-[DVD/CD-ROM-drives]
- If the drive is not recognized by your computer, please check the following items.
  - If an ❗ indicator is displayed on the IDE ATA/ATAPI controllers in [Control Panel]-([Performance and Maintenance])-[System]-[Hardware]-[Device Manager], you will need to contact your PC's manufacturer or the mother-board's manufacturer and get the appropriate IDE controller driver.
- Run **Add New Hardware** in Control Panel to let PC search again for new device.

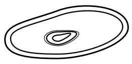
Included Software

Retail versions of this drive come with CD/DVD authoring Software.
Before installing, please uninstall any previous CD/DVD burning software you may have loaded on your PC in order to prevent possible compatibility issues. Once you have installed the application software, you may (if you wish) begin to reinstall previous software, taking note for errors. Check for software updates for all of your writing software.

How to Use the Discs

Don't attach any stickers or labels to discs, It could cause read/write errorsand data loss.





The Discs in this unit operate at a very high speed! DO NOT use damaged, cracked or warped discs. The drive's optical unit may be damaged if they break.

DO NOT use non-standard discs. NON-standard discs may not play or store data properly.

Emergency Eject

This drive has a feature that allows the disc to be ejected manually if this becomes necessary such as failure of the drive or a power outage.

NOTE: Don't use this feature **except** in an emergency.

1) Turn the power to OFF.
2) Poke a fine-tipped object (such as a straightened heavy duty paper clip) into the small hole above the eject button. The front door will pop open and the disk tray will come partway out.
3) Pull the front door to open it all the way, then grip the disc tray between thumb and forefinger and gently pull it straight out.



NOTE: This feature is a last measure to be used only in an emergency.
Using it excessively will cause malfunction.

* If you cannot get a good grip on the disc tray with your fingers, use a steel binder clip or spring clamp to pull it out.

Troubleshooting

Before Requesting Service

Before calling for service, check this list.

- The drive doesn't have power.
  - Is the power supply cable from the host computer plugged in?
  - Is the Power Connector to the drive securely attached?
- The system doesn't start.
  - Are the power and SATA cables to the PC correctly connected?
  - Is the total length of the SATA cable 20 inches or less?
  - Is each connector completely attached?

    Other connections may have been knocked lose while installing the drive.
- Cannot Read or Write Discs.
  - Is the condition of everything else in the system (CPU, hard disc, and others) as it should be? (See system environment.)
  - Does the CD, DVD or BD disc have dirt or scratches?
  - Did a screen saver or other application operate while writing to the disc?
  - Is there enough free space on the CD, DVD disc?
  - Does writing fail even using the simulation test for CD or DVD disc?
  - Is the disc loaded in the drive with the read/write surface facing the right direction? (label up)
  - Is the drive installed in the correct orientation?
  - Was the drive or disc moved from a low temperature environment to a high temperature environment? (There is a possibility of condensation on the lens in the drive or on the surface of the disc.)

When you call for service, be prepared to give as much information as possible of your system, environment, and the specific problem. (What happened? When? How long? What was going on? Were there any error messages displayed? etc.)

Please Note: Since this product supports Regional Playback Control Phase II for DVD-Video with CSS, a certain MPEG decoder card or Software without regional code setting may cause this drive not to read DVD-Video with CSS discs. This Drive enables you to change the regional code up to 5 times.

Specifications

Items		BD/HD DVD/DVD/CD	
General	Supported Discs [*1]	BD-ROM(SL/DL), BD-RE[*2](SL/DL), BD-R(SL/DL), HD DVD-ROM (SL/DL/TWIN), DVD-ROM(SL/DL), DVD-R(SL/DL), DVD-RW, DVD+R(SL/DL), DVD+RW, DVD-RAM[*3], CD-ROM, CD-ROM XA, CD-I, Photo-CD (Single & Multi-Session), Video CD, CD-Audio Disc, Mixed mode CD-ROM disc (data and audio), CD-Extra, CD-Text, CD-R, CD-RW	
	Disc Diameter	12cm/ 8cm (8cm disc can be used only with drive placed horizontally.)	
	Host Interface	Serial ATA	
	Read/Write Speed [*4]	**Write :** **DVD-R** : 2x, 4x, 8x, 12x, 16x **DVD-R (DL)**: 2x, 4x **DVD-RW** : 1x, 2x, 4x, 6x **DVD-RAM** : 2x, 3x, 5x **DVD+R** : 2.4x, 4x, 8x, 12x, 16x **DVD+R (DL)**: 2.4x, 4x **DVD+RW** : 2.4x, 4x, 6x, 8x **CD-R** : 4x, 8x, 16x, 24x, 32x, 40x **CD-RW** : 4x, 10x, 16x, 24x	**Read :** **BD-ROM (SL/DL)** : 6x / 4.8x max. **BD-R (SL/DL)** : 6x / 4.8x max. **BD-RE(SL/DL)**: 2x / 2x max. **BDMV (AACS Compliant Disc)**: 4.8x max. **HD DVD-ROM(SL/DL)** : 3x / 3x max. **HD DVD-Video (AACS Compliant Disc)** : 3x max. **DVD-ROM(SL/DL)** : 16x / 8x max. **DVD-R(SL/DL)**: 12x / 8x max. **DVD-RW(SL)**: 10x max. **DVD+R(SL/DL)**: 12x / 8x max. **DVD+RW(SL)**: 10x max. **DVD-RAM**: 5x max. **DVD-Video(CSS Compliant disc)**: 8x max. **CD-R/RW/ROM** : 40x max. **CD-DA(DAE)**: 40x max.
	Mounting direction	Horizontal/Vertical	
Performance	Data transfer rate *Sustained	BD-ROM : 215.79 Mbits/s (6x) max. HD DVD-ROM : 109.65 Mbits/s (3x) max. DVD-ROM : 22.16 Mbytes/s (16x) max. CD-ROM : 6000 Kbytes/s (40x) max.	
	*Burst(ATAPI)	SATA Gen.1 (1.5Gbps)	
	Average Access Time ($^1/_3$ Stroke)	BD-ROM: 180ms (Typ.), HD DVD-ROM : 210ms (Typ.) DVD-ROM : 160ms (Typ.), DVD-RAM : 180ms (Typ.), CD-ROM : 150ms (Typ.)	
	Buffer capacity	4 Mbytes	
	MTBF	100000 Power On Hours (Duty Cycle 10%)	
Environmental Level	When operating	**Temperature**: 5 °C to 45 °C	**Humidity**: 15% to 80% R.H.
	When not operating	**Temperature**: -30 °C to 60 °C	**Humidity**: 10% to 90% R.H.
Electrical	Power	DC 5V, DC 12V	

[*1] The disc of the cartridge type is not supported.
[*2] BD-RE: The disc of version 1.0 is not supported.
[*3] DVD-RAM 12X media: Not supported to write.
[*4] There might be some cases when this drive can not satisfy the best performance depending on the conditions of the disc, the drive, and the recording format.
* The drive's appearance and specifications may change without prior notice.

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Slough Berkshire SL1 4DX
United Kingdom

Goldstar France E.U.R.L
Paris Nord II 22, Avenue des
Nations-B.P.50372 VILLEPINTE
95945 ROISSY CDG CEDEX France

LG Electronics Italia S.P.A.
Centro Direzione "IL Quadrate" Via
Modigliani, 20090 Segrate (MI) Italy

LG Electronics España
Complejo Europa Empressaries
(Edif.Bruselas) Ctra. N-VI 28230 Las
Rozas Madrid Spain

LG Electronics Australia Pty Ltd.
2 Wonderland drive, Eastern creek,
NSW 2766
or http://www.lge.com.au

LG Electronics Portugal S.A.
Quinta da Fonte – Edifício D. Amélia
Rua Vítor Câmara, nº2, Piso 2
2700-229 Paço d´ Arcos, Portugal
ou www.lge.pt

Caution!

The disc rotates at high speed in the drive unit.
Use of worn, damaged, or non-standard discs can adversely affect the drive and cause the disc to shatter or crush while in use.
Disc crush can only occur when you use a damaged disc in the drive. It is an extremely rare occurrence, but there are steps which can be taken to prevent it.

Always check your discs before inserting them into the drive.

1. **Take care not to use worn, cracked, damaged, warped or poor quality discs, as this may cause damage to your drive.**
2. **Check the clear plastic on the center of the disc, cracks here are the main cause of disc crush.**
3. **Do not play discs which are a non-standard (I.e. non-circular)shape, such as heart shaped discs, or discs in the shape of a business card.**

How can you keep your discs from becoming damaged?

1. **When not in use, remove discs from the drive.**
2. **Keep discs in the packaging supplied with them and out of direct sunlight and away from heat sources.**

Excessive vibration or a sudden jolt to the drive during operation may cause a malfunction.
Avoid exposing the drive to sudden changes in temperature as it may cause condensation to collect inside the drive.

Please visit www.lgservice.com and install the automatic firmware download program, "LG ODD Online F/W update." This program will automatically check for new firmware releases and download them. It is also included on the software discs that accompany our drives.

P/NO. MFL31705816